

N^o 27,837



A.D. 1904

Date of Application, 20th Dec., 1904—Accepted, 26th Jan., 1905

COMPLETE SPECIFICATION.

Removable Artificial Dentures

I, FINIS EWING ROACH, Dentist, of the Trude Building, Chicago, County of Cook, State of Illinois, United States of America, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

5 This invention relates to artificial dentures and more particularly to that class of artificial dentures, including partial plates, bridges, crowns and other structures, adapted to be secured or partly secured to the natural teeth or the roots thereof as the case may be. Heretofore, many attempts have been made to provide artificial dentures which, though firmly held in place, are capable of
10 being readily removed from the mouth for purposes of cleansing or repair. Such structures have usually been unsatisfactory, inasmuch as the same are usually connected rigidly with the abutment or anchor tooth, thus exerting constant strain upon the anchor tooth or teeth due to pressure in mastication. It has also been very difficult to install the same for the reason that such
15 mechanical structures are secured to the natural teeth or roots and heretofore it has been necessary to secure perfect alignment of said structures to enable the bridge or partial plate to be secured in place.

The object of this invention is to provide removable artificial dentures of any and all kinds, adapted to be practically self adjusting in the mouth and afford-
20 ing a very strong, though slightly yielding engagement with the abutments, and so connected therewith as to avoid entirely the necessity for arranging the fastenings therefor on the natural teeth or roots in alignment or in parallel relation, as has usually been the case. It is also an object of the invention to provide means whereby, though the abutments on each side of the artificial
25 denture may converge either inwardly or outwardly, a secure and positive support for the bridge or the like is obtained. It is a further object of the invention to provide means whereby the frictional engagement of the connection between the artificial and natural tooth may be varied at will, thus enabling any desired or necessary holding stress for the structure to be secured. The
30 invention embraces many novel details and consists in the matters hereinafter described and more fully pointed out and defined in the appended claims.

In the drawings:

Figure 1 is a perspective view of the partial plate and illustrates means for securing the same to the natural teeth.

35 Figure 2 is a fragmentary section taken on line 2—2 of the partial plate shown in Figure 1.

Figure 3 is a longitudinal section of a bridge showing the same inserted between abutments, which converge outwardly.

40 Figure 4 is a similar section illustrating a method of connecting a bridge with a gold crown.

Figure 5 is a longitudinal section illustrating a reversal of the construction as shown in Figures 1 to 4 inclusive.

Figure 6 is an enlarged perspective view of a bridge supported upon two natural roots, showing the parts separated.

[Price 8d.]

Roach's Removable Artificial Dentures.

Figure 7 is an enlarged transverse section of a crown removably attached to a root by means embodying my invention.

Figure 8 is an enlarged detail of fastening means embodied in my invention.

Figure 9 is a transverse section taken through a denture.

As shown in said drawings:

My invention embraces means affording a ball and a socket joint or connection between the artificial and the natural denture and may, of course, assume many different forms dependent upon the nature of the structure to be secured in place the material of which constructed and the character, shape and condition of the abutment or supporting tooth or root to which the artificial denture is to be secured.

Referring first to Figure 1, A indicates a somewhat diagrammatic section of the lower jaw in which the front teeth or incisors and cuspids only remain. α indicates a socket member comprising a sleeve longitudinally secured on or inlaid in the sides of the laterally disposed teeth or cuspids and provided in its outer side with an open slot adapted to receive the split ball shaped head of a pin α^1 positively secured in the artificial denture. In the present instance, the denture comprises a requisite number of molars A^2 on each side the plate which are connected with the laterally disposed natural teeth, as before described and which affords a positive support and stay therefor. As shown in Figures 1 and 2, inasmuch as the rear abutment is lacking, an additional stay is provided comprising a plate α^3 through which the head of the pin extends and which is provided near the top of the denture with an outwardly directed point which extends into the socket member. The artificial denture is also supported on the process in the usual manner. If the artificial denture be of gold or other metal or upon a base of vulcanized rubber, the pin α^1 may be soldered or vulcanized therein respectively in the proper position to engage in said socket member or sleeve α when in place. If however, a porcelain denture be used, a sleeve α^4 may be set therein as shown in Figure 2 into which the pin is inserted after the denture is baked, thus avoiding injury to the pin from the heat. Said pins as shown, each comprise an elongated shank or body provided with a ball shaped head α^2 as shown in Figure 8 which is connected with said pin by means of a constricted neck as shown in Figure 8 with which the edges of the sleeve α closely fit and which acts to increase the frictional engagement of the pin head with said sleeve. Said end of the pin is preferably split for a part of its length thus enabling the same to be spread slightly to increase the frictional engagement in the socket.

Said socket pieces may, of course, be secured to metallic crowns or the like by inlaying the same therein or soldering the same thereto or making the same integral therewith and if secured on natural teeth may also be inlaid therein if preferred, or of course, may be inlaid as a part of a filling.

If preferred, said pins may be adjustably secured in the artificial denture. This may be accomplished by securing a tube α^8 within the denture and providing a longitudinal notch in one side the pin within the tube. The tube is indented to provide an inward projection, thus affording a detent extending into said notch which permits a slight outward or inward movement of the pins. This is very convenient where the adjacent faces of the abutments are not parallel. If preferred, the pin may be inserted in the abutment as shown in Figure 5 and the socket members carried on the artificial denture or bridge. Said socket pieces as shown are each soldered or otherwise connected with a telescoping sleeve α^7 which extends through the artificial denture and owing to the same being adjustable as to length, permits said sleeves to be adjusted exactly to receive the heads of the pins. In this construction, also, it is obvious, that it is immaterial if the socket pieces α^6 be in parallel relation, inasmuch as the rounded heads of the pins permits the insertion of the socket pieces in place over the same at whatsoever angle the same may be arranged with respect to each other.

Roach's Removable Artificial Dentures.

My invention is readily adapted for capping or crowning as shown in Figures 6 and 7.

Referring first to Figure 7, B indicates the natural root at the top of which is secured a cope *b* in the usual manner provided with a central closed sleeve *b*¹ provided with a peripheral enlargement *b*² at its lower end which extends downwardly into the nerve canal of the tooth, enlarged for that purpose. In the construction shown the crown comprises a porcelain facing *B*¹ connected with the usual metallic or any backing *b*³ in the usual or any desired manner and connected with a base *b*⁴ by means of solder or other suitable material which fills up the back of the tooth, said base *b*⁴ is provided with an upwardly extending ball shaped socket *b*⁵ which, when the crown is in position registers with the sleeve *b*¹ in the root and which, of course, in the construction shown is entirely surrounded and united with the backing of the tooth by means of the solder filling therefor and is also connected with said backing by means of the usual or any metallic pin *b*⁶ which is bent downwardly and soldered to the top thereof. Secured within said ball shaped socket is a ball *b*⁷ which as shown is provided with an axial threaded aperture therein adapted to receive the upper reduced end of the pin *C* which is threaded for engagement in said ball and on the outer or lower end of which is an enlarged head to fit in said sleeve *b*¹ and is split for a portion of its length whereby its frictional engagement in said sleeve may be varied by spreading the sides of the head thereof farther apart.

Where bridges are supported on and anchored to natural roots, the ball and socket joint permits the pins to adjust themselves to the root canals of the abutments inasmuch as the outer or free ends of the pins can be swung to any desired angle for insertion into said root canals as shown in dotted lines in Figure 6 in which a porcelain bridge *B*² is shown thus avoiding the necessity heretofore existing of making the apertures whereby the bridge is anchored or secured, exactly parallel.

The operation is as follows:

The ball and socket connection between the artificial and natural teeth enables the parts to adjust themselves perfectly to the mouth of the wearer, enabling the artificial dentures to be positively supported upon the process or gum while the connection with the abutment, affords a strength and adjustability never before attained. From the construction described, it is obvious that the wearer may, at any time, readily remove the artificial denture by lifting upwardly adjacent ones of the ball and socket connections, thus releasing the dentures. Notwithstanding the facility with which the same may be removed, however, the construction firmly holds the denture in place during mastication and insures the denture adapting itself perfectly to the mouth without strain upon the abutments. Should the wear, due to any slight relative movement afforded in the ball and socket joint, cause the denture to become somewhat loose, slightly spreading the head of the pin, enables any desired degree of frictional engagement to be secured.

Obviously, my invention may be applied to dentures in many different ways and it is immaterial how said pins are secured in place in the part with which connected or if the same are secured in the natural or the artificial denture and in the drawings, I have indicated but few of the many methods of embodying my invention, I therefore do not purpose to limit this application otherwise than necessitated by the prior art, as obviously many details of construction and application may be varied without departing from the principles of this invention.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:—

1. In a device of the class described, the combination with a natural denture or part thereof, of an artificial denture, a sleeve in one of said dentures, a

Roach's Removable Artificial Dentures.

headed pin removably engaged therein, a socket in the other denture and a part carried on said pin adapted to engage therein and permit movement of one denture with respect to the other.

2. In a device of the class described the combination with a natural denture or part thereof, of an artificial denture, means connecting said dentures permitting adjustment of one with respect to the other comprising a pin carried on one denture, a ball shaped head thereon and a socket in the other denture adapted to engage said head and permit relative movement of said dentures. 5

3. In a device of the class described, a natural denture provided with a tubular socket therein, an artificial denture provided with a socket therein, a pin engaged in the socket in each denture and a removable ball thereon adapting said dentures to adjust themselves with each other regardless of whether said sockets are in alignment. 10

9. In a removable artificial denture, the combination with a natural denture or a part thereof, of an artificial denture adapted to be secured thereto, a sleeve in one of said dentures, a headed pin carried therein and a socket in the other denture adapted to adjustably engage said pin and permit yielding engagement between said dentures. 15

5. In a device of the class described, an artificial denture having a socket therein, a natural denture, a pin connecting the same, a ball adjustably engaged on said pin in said socket affording a laterally yielding joint. 20

6. The combination with a natural tooth or root abutment of an artificial denture, a ball shaped projection thereon, a corresponding tubular socket piece carried on the abutment and means for varying the frictional engagement thereof and a projection on said denture adapted to engage in said socket piece above said ball shaped projection. 25

7. In a device of the class described the combination with a natural denture or a part thereof, of an artificial denture adapted to be engaged thereon, a tubular socket on one of said parts and a pin pivotally supported on the other adapted to engage in said socket and afford a pivotal joint between said dentures. 30

8. Means for attaching an artificial tooth upon a root or the like comprising a cope adapted to be secured upon the root, a sleeve extending downwardly therefrom and provided at its inner end with an enlargement, a cap adapted for adjustment on the cope and affording near its base a ball shaped socket, a connecting pin, an enlarged lower end thereon cleft longitudinally and adapted to engage within said sleeve and a ball shaped head at the other end of said pin and having threaded engagement thereon and interfitting in said socket in the cap. 35

9. In an artificial denture, connecting means comprising a socket, a pin provided at one end with a cleft head adapted to frictionally engage in said socket and means on the other end of said pin affording a movable joint with said denture. 40

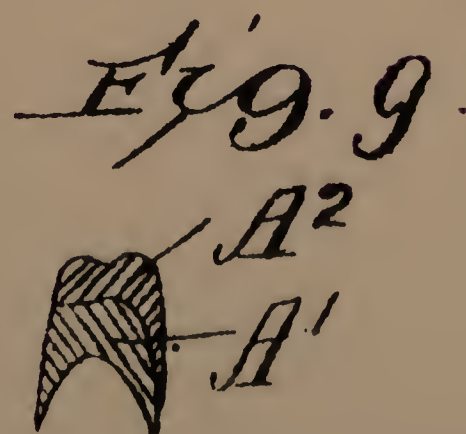
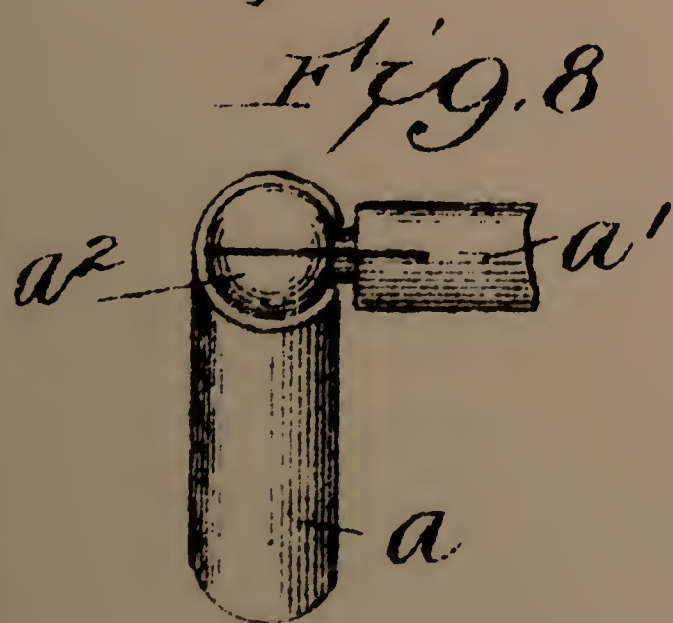
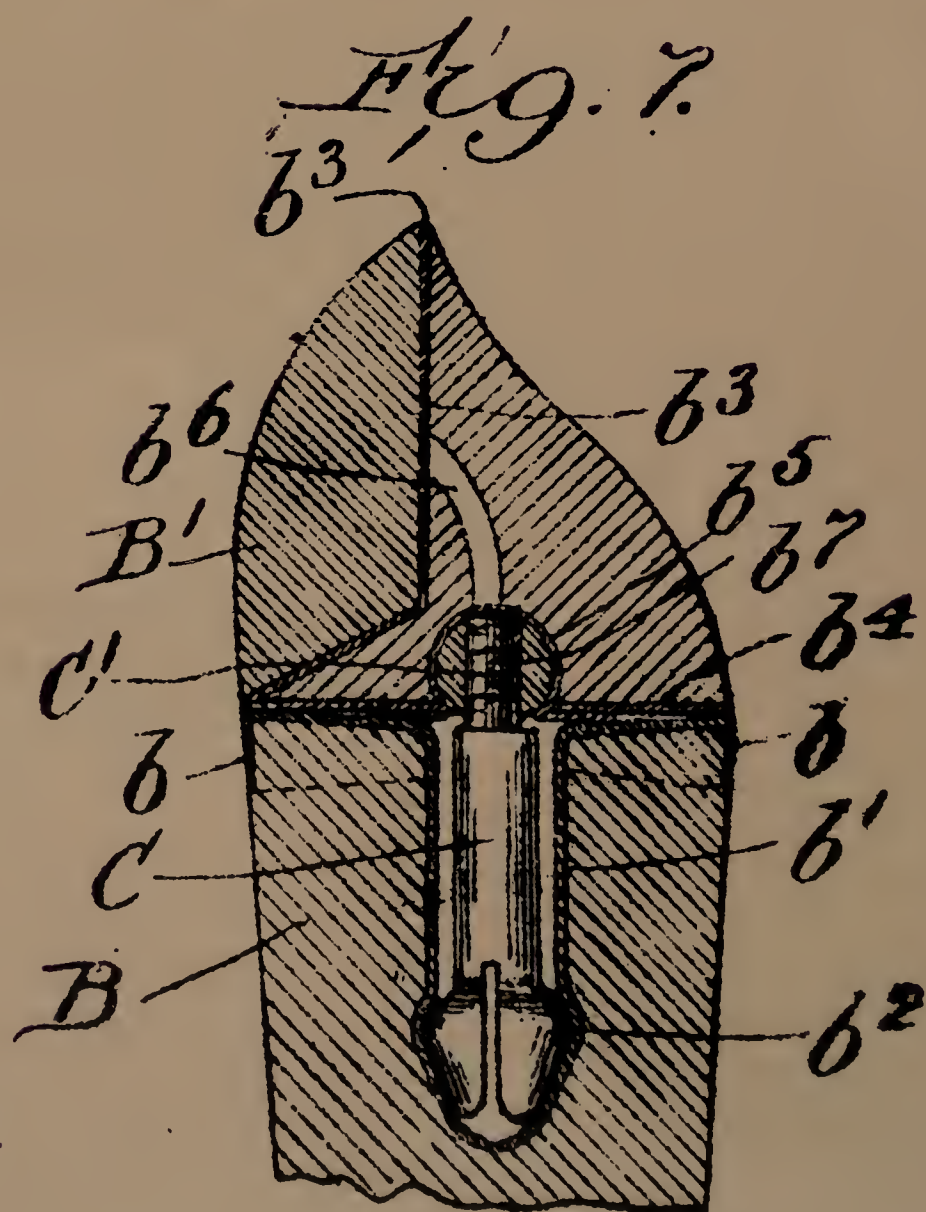
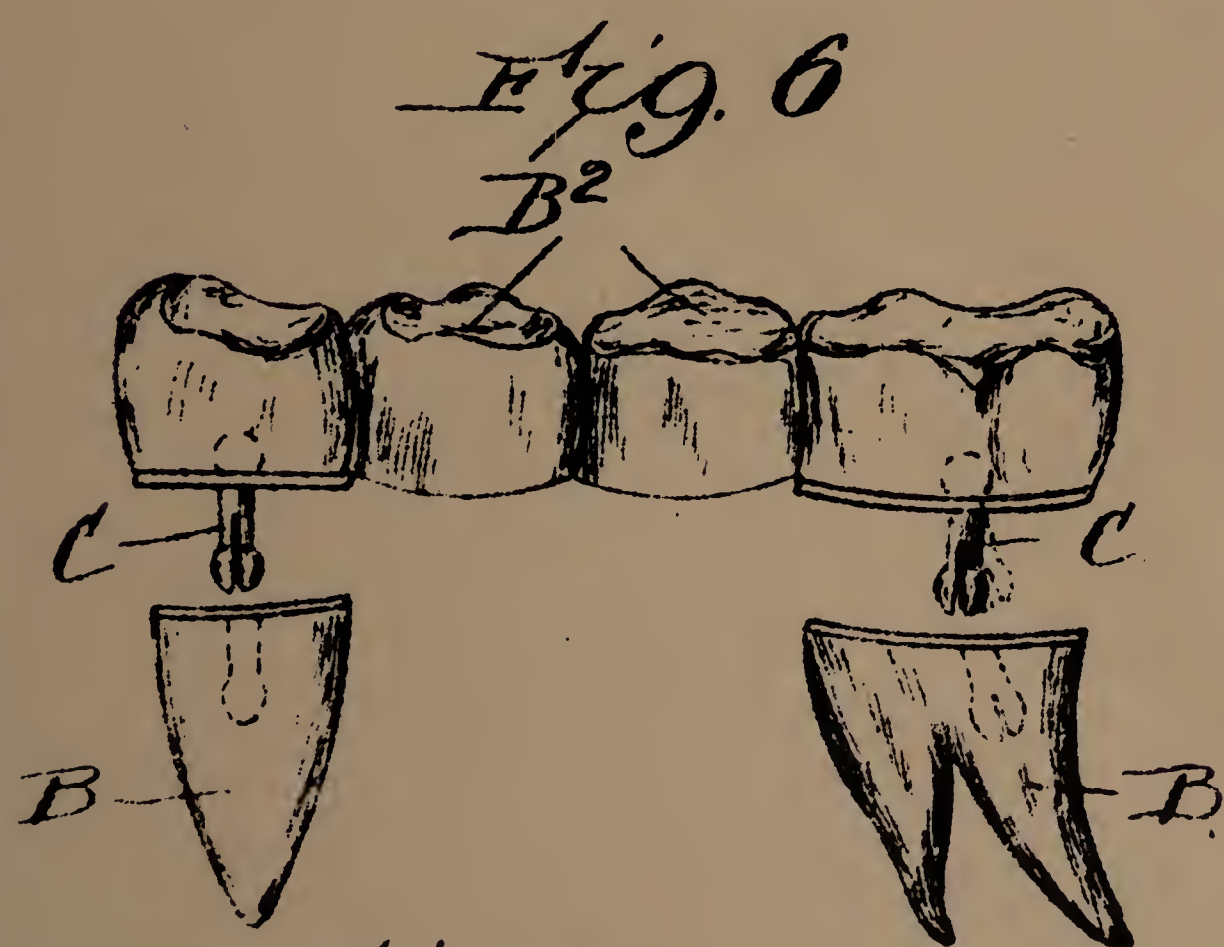
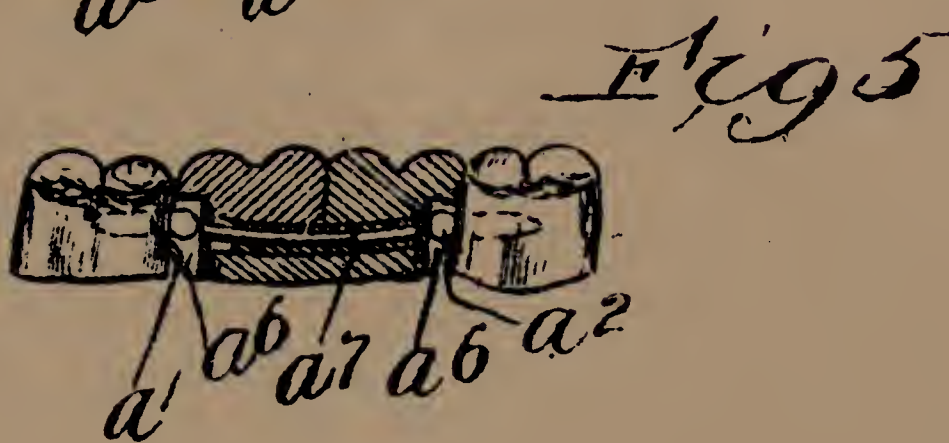
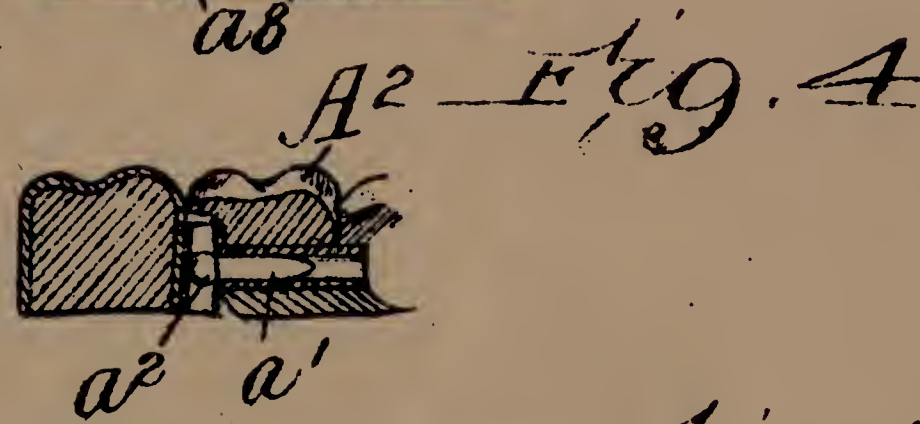
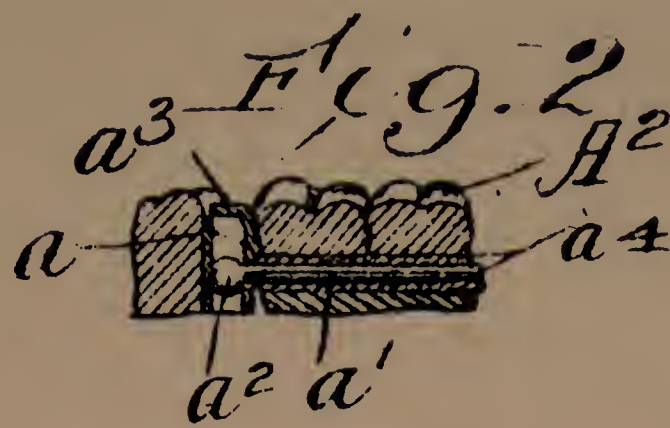
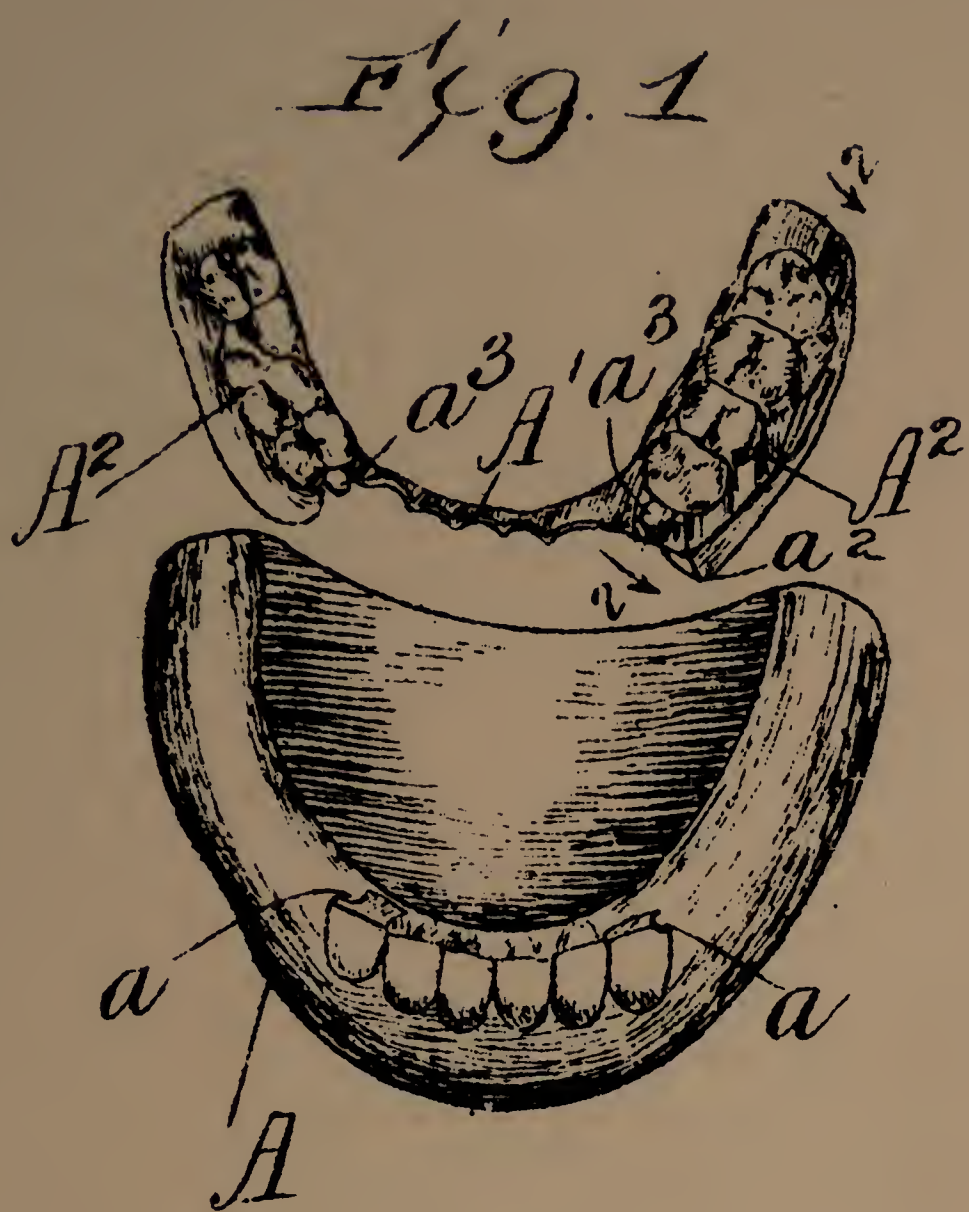
10. In a device of the class described the combination with a natural denture or part thereof, of an artificial denture, a socket in each denture and a self adjusting connection between said dentures comprising a pin and means thereon adapted to movably engage in said sockets. 45

11. In an artificial denture connecting means comprising a ball shaped socket in said denture, a complementary head therein, a pin having threaded engagement with said head, and adapted when screwed inwardly to tighten the head in the socket, said pin affording an adjustable connection with a natural denture. 50

Dated this 20th day of December 1904.

ALLISON BROS.,
Agents for the Applicant. 55





[This Drawing is a full-size reproduction of the Original.]

